

PATENT SPECIFICATION



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PROVISIONAL SPECIFICATION.

Improvements in or relating to Electric Torches, Flash Lamps and the like.

We, THE EVER READY COMPANY (GREAT BRITAIN) LIMITED, a British Company, of "Ever-Ready" Works, Hercules Place, Holloway, London, N. 7., Manufacturers, and MAURICE COKER TERRY, Works Manager, of the above address, a subject of the King of Great Britain, do hereby declare the nature of this invention to be as follows:—

10 This invention relates to electric torches, flash lamps and the like, and especially to such articles having focusing means, a separate switch being at present employed for completing or breaking the electrical circuit as desired.

15 According to the invention in an electric torch, flash lamp or the like the completion or breaking of the electrical circuit and the adjustment of the focus are controlled by a single common operating member. The parts are preferably so arranged that initial movement of the operating member causes the electrical circuit to be completed, further movement causing the electric lamp bulb to be moved in relation to the reflector so as to vary the focus.

20 The operating member is preferably in the form of an end cap closing that end of the battery casing which is remote from the lamp bulb, the cap being movable longitudinally of the casing so as to bring the battery into electrical connection with the lamp bulb, further movement of the end cap in relation to the battery casing causing the lamp bulb to be pushed longitudinally of the casing and through the medium of the battery.

25 In a preferred embodiment of the invention as applied to an electric torch, the battery casing carries at one end a lens cap and reflector which may be of the usual construction, the opposite end of the battery casing being closed by means of an end cap which can be moved helically of the casing by turning it about the axis of the casing, movement of the end cap in relation to the casing being controlled by means of projections associated with the walls of the casing and which engage inclined slots in the end cap the projections being preferably carried by resilient arms riveted or otherwise secured to the interior

of the casing, the projections passing through holes in the casing and into engagement with the inclined slots. With this arrangement the end cap may be readily removed to obtain access to the battery by depressing the projections by means of the thumb and finger out of engagement with the inclined slots.

30 The lamp bulb is mounted within a screw-threaded tubular socket disposed axially within the casing at the opposite end and slidable within a surrounding sleeve carried by a disc closing that end of the casing, the tubular socket containing a member of fibre or other insulating material within which is mounted a contact pin, one end of which is engaged by the central electrode of the lamp bulb, the opposite end of the contact pin being adapted to make contact with the positive electrode of the battery when the latter is moved into engagement therewith. The lamp bulb is maintained in its normal position by means of a coiled spring surrounding the tubular socket and disposed between the sleeve in which the socket is slidably mounted and a washer which is preferably constructed from fibre or other insulating material and which is secured beneath the lower edge of the socket by means of the contact pin, the extremity of which is riveted over for this purpose.

35 The positive electrode of the battery is maintained normally out of engagement with the contact pin by means of a ring or distance piece of insulating material slidably mounted within the battery casing, the ring of insulating material engaging the upper end of the battery and urging the latter towards the opposite end of the battery casing under the action of a coiled spring which may be in the form of a spiral and which is disposed between the upper surface of the insulating ring and the under surface of the disc closing that end of the battery casing. In order to limit movement of the insulating ring towards the end of the casing upon which the end cap is mounted, the insulating ring may be provided with an inwardly projecting lip or flange which engages the adjacent surface of the washer

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or fibre disc which is maintained in position by means of the centrally disposed contact pin.

The lower end of the battery may either engage the end cap directly or a separate member may be interposed between the under surface of the battery and the inner surface of the end cap. In the latter case this member may be of substantially cup-shaped form having one or more pressed-out protuberances which are adapted to make contact with the zinc casing or negative electrode of the battery, the cup-shaped member being provided with a pair of resilient arms which are pressed out to constitute a clip for the reception of a spare lamp bulb which is located within the cup-shaped member. The end cap may be provided with a knurled periphery to facilitate its rotation by the operator.

In operation, upon turning the end cap axially of the battery casing in the correct direction, the former will also move longitudinally of the casing due to the interengagement of the projections with the inclined slots, the battery being thereby slid within the casing into a position in which its positive electrode engages the central contact pin, the electrical circuit through the filament of the lamp bulb being thereby completed, further movement of the end cap in the same direction causing the lamp bulb socket to be moved in a direction in which the lamp bulb is moved further away from the reflector so as to adjust the focus to suit particular circumstances. The degree of movement of the end cap in either direction is limited by the length of the inclined slots, the projections coming into engagement with the extremities of the inclined slots at each terminal position, whilst the battery and lamp bulb are automatically returned to their normal positions under the action of the springs when the end cap is turned in the reverse direction, the final turning movement of the end cap causing the positive electrode of the battery to be moved out of engagement with the contact pin so as to break the electrical circuit.

With the object of preventing the possibility of the end cap rotating accidentally in relation to the battery casing, the slots provided in the end cap instead of having substantially straight edges may be of a zig-zag or equivalent construction so that the end cap upon being rotated will be moved longitudinally of the battery casing with a step by step motion. For example, each slot may include a

series of inclined or substantially helically disposed portions connected together by means of intervening portions which are disposed at right angles or substantially at right angles to the longitudinal axis of the battery casing. With this arrangement it is not only necessary to rotate the end cap about the axis of the battery casing, but also to move it longitudinally of the casing against the action of the springs. Alternatively, the walls of the end cap may be pressed out to constitute a series of outwardly extending indentations of part spherical form, the indentations being disposed end to end and preferably connected together, each line of indentations being preferably inclined or substantially helically arranged in relation to the end cap, the casing being provided with spring pressed balls or other members which are adapted to engage the indentations and thereby maintain the end cap frictionally in any desired position. The walls of the end cap adjacent the indentations which are remote from that end of the battery casing containing the electric lamp bulb are preferably formed with a small lid to facilitate the disengagement of the spring pressed portions therefrom and to enable the end cap to be readily removed when desired.

In any of the constructions hereinbefore described, although the slots or other equivalents are preferably disposed in the end cap, they may nevertheless be disposed in the battery casing, the end cap in that case carrying the pins, spring pressed balls or their equivalents with which they are intended to co-operate. As a further alternative, in lieu of the pin-and-slot or equivalent connection between the battery casing and the end cap the co-operating parts may be connected together by means of a screw-threaded engagement.

Although the invention has been described as applied to an electric torch it may nevertheless be equally well applied to flash lamps and battery lamps generally of the focussing kind.

Dated this 26th day of January, 1933.

HASELTINE, LAKE & Co.,
28, Southampton Buildings, London,
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19—25, West 44th Street, New York,
U.S.A.,
Agents for the Applicants.

COMPLETE SPECIFICATION.

Improvements in or relating to Electric Torches, Flash Lamps and the like.

We, THE EVER READY COMPANY (GREAT BRITAIN) LIMITED, a British Company, of "Ever-Ready" Works, Hercules Place, Holloway, London, N. 7., Manufacturers, and MAURICE COKER TERRY, Works Manager, of the above address, a subject of the King of Great Britain, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to electric torches, flash lamps or the like of the focussing type and especially to electric torches of the kind in which the electric lamp bulb and associated socket can be moved towards or away from the reflector for focussing purposes under the action of the battery which is slidable longitudinally of the battery casing, movement of the battery to force the lamp bulb and its associated socket further away from the reflector being caused by a combined turning and endwise movement of an end cap closing the battery casing at its lower end, the lamp bulb and socket being adapted to return to their normal positions under the action of a coiled spring when the end cap is turned in the opposite direction. In such electric torches it is at present the usual practice to employ a separate switch for completing or breaking the electrical circuit.

The chief object of the invention is to provide an electric torch, flash lamp or the like of a generally improved and simplified construction.

According to the invention in an electric torch, flash lamp or the like of the type set forth completing or breaking of the electrical circuit and focussing is effected by turning the end cap relatively to the battery casing, initial movement of the end cap causing the electrical circuit to be completed, further movement of the end cap causing the electric lamp bulb and its associated socket to be moved further away from the reflector.

It has already been proposed in electric torches, flash lamps or the like other than of the type to which the invention relates to employ a common operating member for completing or breaking the electrical circuit and to vary the focus, completion of the electrical circuit being effected by initial movement of the operating member, further movement causing the reflector

to move relatively to the lamp bulb or the lamp bulb to move relatively to the lens, but in such prior constructions the operating member was not in the form of an end cap closing the battery casing at its lower end.

In order that the invention may be clearly understood and readily carried into effect the same will now be described more fully with reference to the accompanying drawings, which illustrate a preferred embodiment of the invention, wherein:—

Figure 1 represents in elevation, partly in section an electric torch constructed in accordance with the invention.

Figure 2 is a vertical section of a portion of the torch on the line A—B in Figure 1.

Figure 3 represents a fragmentary side elevation of a modified construction of electric torch.

In the construction shown by Figures 1 and 2 of the drawings the battery casing 1 of the electric torch carries at one end a lens cap 2 and reflector 3 which may be of the usual construction, the opposite end of the battery casing 1 being closed by means of an end cap 4 which can be moved helically of the casing by turning it about the axis of the casing, movement of the end cap in relation to the casing being controlled by means of projections 5 associated with the walls of the casing and which engage inclined slots 6 in the end cap, the projections being carried by resilient arms 7 riveted or otherwise secured at 8 to the interior of the casing, the projections passing through holes in the casing, and into engagement with the inclined slots 6. With this arrangement the end cap may be readily removed to obtain access to the battery by depressing the projections by means of the thumb and finger out of engagement with the inclined slots. Alternatively, each slot may terminate at one end in an outwardly pressed trough through which the pins can pass when the end cap is being removed or replaced in position upon the battery casing, in which case the resilient arms may be dispensed with, the pins 5 being riveted or otherwise rigidly mounted upon the battery casing.

The lamp bulb 9 is mounted within a screw-threaded tubular socket 10 disposed axially within the casing at the opposite end and slidable within a surrounding

sleeve 11 carried by a disc 12 closing that end of the casing, the tubular socket containing a member 13 of fibre or other insulating material within which is mounted a contact pin 14, one end 15 of which is engaged by the central electrode 16 of the lamp bulb, the opposite end 17 of the contact pin being adapted to make contact with the positive electrode 18 of the battery 19 when the latter is moved into engagement therewith. The lamp bulb is maintained in its normal position by means of a coiled spring 20 surrounding the tubular socket and disposed between the sleeve in which the socket is slidably mounted and a washer 21 which is preferably constructed from fibre or other insulating material and which is secured beneath the lower edge of the socket by means of the contact pin, the extremity of which is riveted over for this purpose.

The positive electrode of the battery is maintained normally out of engagement with the contact pin by means of a ring or distance piece 22 of insulating material slidably mounted within the battery casing, the ring of insulating material engaging the upper end of the battery at 23 and urging the latter towards the opposite end of the battery casing under the action of a coiled spring 24 which may be in the form of a spiral and which is disposed between the upper surface of the insulating ring and the under surface of the disc closing that end of the battery casing. In order to limit movement of the insulating ring towards the end of the casing upon which the end cap is mounted, the insulating ring may be provided with an inwardly projecting lip or flange 25 which engages the adjacent surface of the washer or fibre disc which is maintained in position by means of the centrally disposed contact pin.

The lower end of the battery may either engage the end cap directly or a separate member 26 may be interposed between the under surface of the battery and the inner surface of the end cap. In the latter case this member may be of substantially cup-shaped form having one or more pressed-out protuberances which are adapted to make contact with the zinc casing or negative electrode of the battery, the cup-shaped member being provided with a pair of resilient arms 27 which are pressed out to constitute a clip for the reception of a spare lamp bulb which is located within the cup-shaped member. The end cap may be provided with a knurled periphery 28 to facilitate its rotation by the operator.

In operation, upon turning the end cap axially of the battery casing in the co-

rect direction, the former will also move longitudinally of the casing due to the interengagement of the projections with the inclined slots, the battery being thereby slidden within the casing into a position in which its positive electrode engages the central contact pin, the electrical circuit through the filament of the lamp bulb being thereby completed, further movement of the end cap in the same direction causing the lamp bulb socket to be moved in a direction in which the lamp bulb is moved further away from the reflector so as to adjust the focus to suit particular circumstances. The degree of movement of the end cap in either direction is limited by the length of the inclined slots, the projections coming into engagement with the extremities of the inclined slots at each terminal position, whilst the battery and lamp bulb are automatically returned to their normal positions under the action of the springs when the end cap is turned in the reverse direction, the final turning movement of the end cap causing the positive electrode of the battery to be moved out of engagement with the contact pin so as to break the electrical circuit.

In the modified construction of electric torch shown by Figure 3, the end cap 4 is again provided with two inclined slots, the slots being designated by the reference numeral 6a. In this construction, however, which is intended to obviate any possibility of the end cap turning accidentally relatively to the battery casing, the upper edge of each slot is of sinuous form, each slot being of such a width as to enable the projections or sinuous parts 29 to ride over the pins 5a when the end cap is turned, the interengagement of the sinuous parts with the pins under the action of the spring 24 shown in Figure 1 being such as will prevent over-riding of the parts accidentally. If desired, the resilient arms 7 also may be omitted in this construction, the pins 5a being riveted or otherwise rigidly secured to the battery casing, the entry of the pins into the slots being effected by outwardly pressed tunnels 30 situated at one end of the slots through which the pins can pass when the end cap is being placed in position or removed from the battery casing.

Alternatively, the slots provided in the end cap may be of a zig-zag or equivalent construction so that the end cap upon being rotated will be moved longitudinally of the battery casing with a step-by-step motion. For example, each slot may include a series of inclined or substantially helically disposed portions connected together by means of intervening portions

which are disposed substantially at right angles to the longitudinal axis of the battery casing or alternatively disposed parallel to said longitudinal axis. With

5 the latter arrangement it is not only necessary to rotate the end cap about the axis of the battery casing, but also to move it longitudinally of the casing against the action of the springs. Alternatively, the
10 walls of the end cap may be pressed out to constitute a series of outwardly extending indentations of part spherical form, the indentations being disposed end to end and preferably connected together, each
15 line of indentations being preferably inclined or substantially helically arranged in relation to the end cap, the casing being provided with spring pressed balls or other members which are adapted to en-
20 gage the indentations and thereby maintain the end cap frictionally in any desired position. The walls of the end cap adjacent the indentations which are re-
25 moted from that end of the battery casing containing the electric lamp bulb are preferably formed with a small lead to facilitate the disengagement of the spring pressed portions therefrom and to enable the end cap to be readily removed when
30 desired.

Although in the constructions hereinbefore described electrical connection between the battery and filament of the electric lamp bulb is effected by moving the
35 battery into electrical connection therewith, the battery may, if desired, be arranged permanently in electrical connection with the filament, a spring being provided for normally holding the battery
40 out of electrical connection with the end cap, the electrical circuit being completed by moving the end cap relatively to the battery casing so that the end cap or a part associated therewith makes electrical
45 contact with the battery, further movement of the end cap in the same direction causing the lamp bulb and its associated socket to be moved relatively to the reflector.

50 In any of the constructions hereinbefore described, although the slots or other equivalents are preferably disposed in the end cap, they may nevertheless be disposed in the battery casing, the end cap in
55 that case carrying the pins, spring pressed balls or their equivalents with which they are intended to co-operate. As a further alternative, in lieu of the pin-and-slot or equivalent connection between the battery casing and the end cap the co-operating
60 parts may be connected together by means of a screw-threaded engagement.

Although the invention has been described as applied to an electric torch it
65 may nevertheless be equally well applied

to flash lamps and battery lamps generally of the focussing kind.

Having now particularly described and ascertained the nature of our said invention and in what manner the same
70 is to be performed, we declare that what we claim is:—

1. An electric torch, flash lamp or the like of the kind set forth, wherein completion or breaking of the electrical circuit
75 and focussing is effected by turning the end cap relatively to the battery casing, initial movement of the end cap causing the electrical circuit to be completed, further movement of the end cap causing
80 the electric lamp bulb and is associated socket to be moved further away from the reflector.

2. An electric torch, flash lamp or the like as in claim 1, wherein initial movement of the end cap in the one direction causes the battery to be moved into electrical connection with the filament of the lamp bulb, further movement of the end cap in the same direction causing the
85 lamp bulb and its associated socket to be moved relatively to the reflector through the medium of the battery, means being provided for returning the battery, lamp bulb and its associated socket to their normal positions upon the end cap being moved in the opposite direction and to its normal position relatively to the battery casing.

3. An electric torch, flash lamp or the like as in claim 2, wherein the lamp bulb and its associated socket are maintained in their normal positions by means of a spring, a further spring being provided for maintaining the battery normally out
100 of electrical connection with the filament of the lamp bulb.

4. An electric torch, flash lamp or the like as in claim 3, wherein the end cap and battery casing are connected together
110 by means of one or more inclined or helically arranged slots formed in the one part co-operating with one or more pins or projections carried by the remaining part.

5. An electric torch, flash lamp or the like as in claim 4, wherein the inclined or helically arranged slots are formed in the end cap.

6. An electric torch, flash lamp or the like as in claim 5, wherein the pins are carried by resilient arms riveted or otherwise secured to the inner surface of the battery casing, said pins projecting through holes in the battery casing and into operative engagement with said slots.
120

7. An electric torch, flash lamp or the like as in claim 5 wherein the pins are rigidly secured to the battery casing and one end of each slot is connected to the edge of the end cap by means of an out-
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wardly pressed tunnel through which the pins can pass into engagement with the inclined slots when removing or replacing the end cap.

- 5 8. An electric torch, flash lamp or the like as in claim 7, wherein each slot in the end cap is of sinuous or zig-zag form.
9. An electric torch, flash lamp or the like of the kind set forth substantially as

described with reference to the accompanying drawings.

Dated the 26th day of January, 1934.

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[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

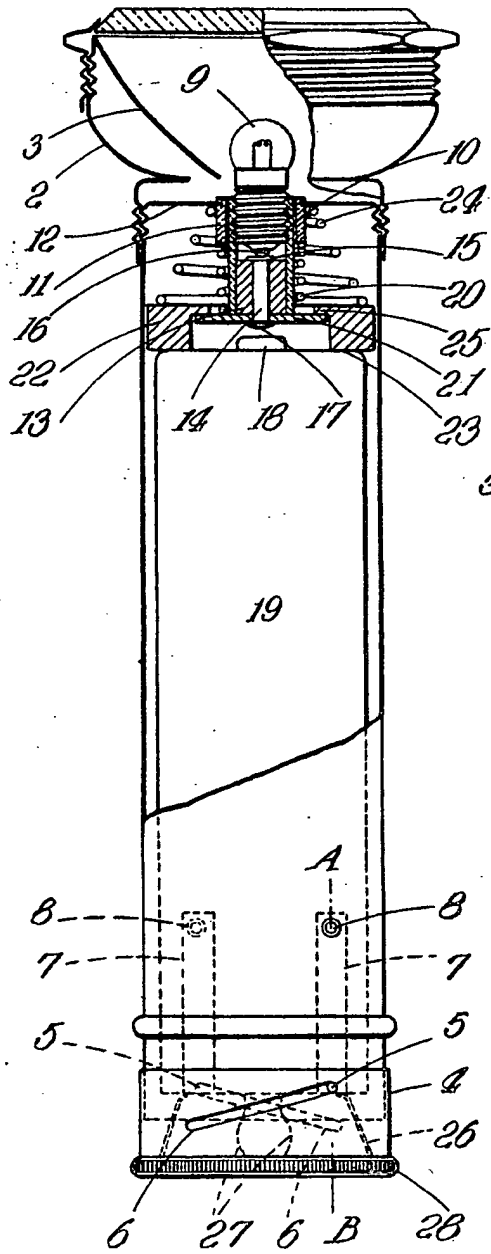


Fig. 3.

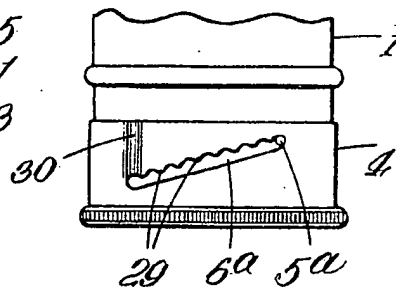


Fig. 2.

